North Central Tennessee Regional Water Supply Planning Pilot Study

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Presentation Outline

- Project Update Overview
- Water Demand Projections
- Existing Source Yield Estimates
- Regional Need Statements
- Alternatives Under Consideration
- OASIS Modeling of Source/Systems Reliability
- Alternative Screening Protocol and Decision Matrix

Project Update Overview

- Complete:
  - Water Demand Projections
  - Existing Water Source Yield Analyses
  - Alternative Water Source Identification
  - Preliminary Design/Yield of Alternative Water Sources
  - Preliminary Cost Estimates
- Underway:
  - Final Design/Yield of Alternative Water Sources
  - Final Cost Estimates
- Alternative Screening Matrix

Demand Projections

- Driven by Population Growth
  - Projections from UT Center for Business and Economic Research (CBER)
  - Growth in system population served in direct proportion to CBER growth estimates
- Commercial and Industrial Use
  - Proportional to population growth and density
  - Statewide evaluation of ratio of commercial/industrial to residential water use
  - Increases to 1:1 ratio at 1000 persons/sq. mile

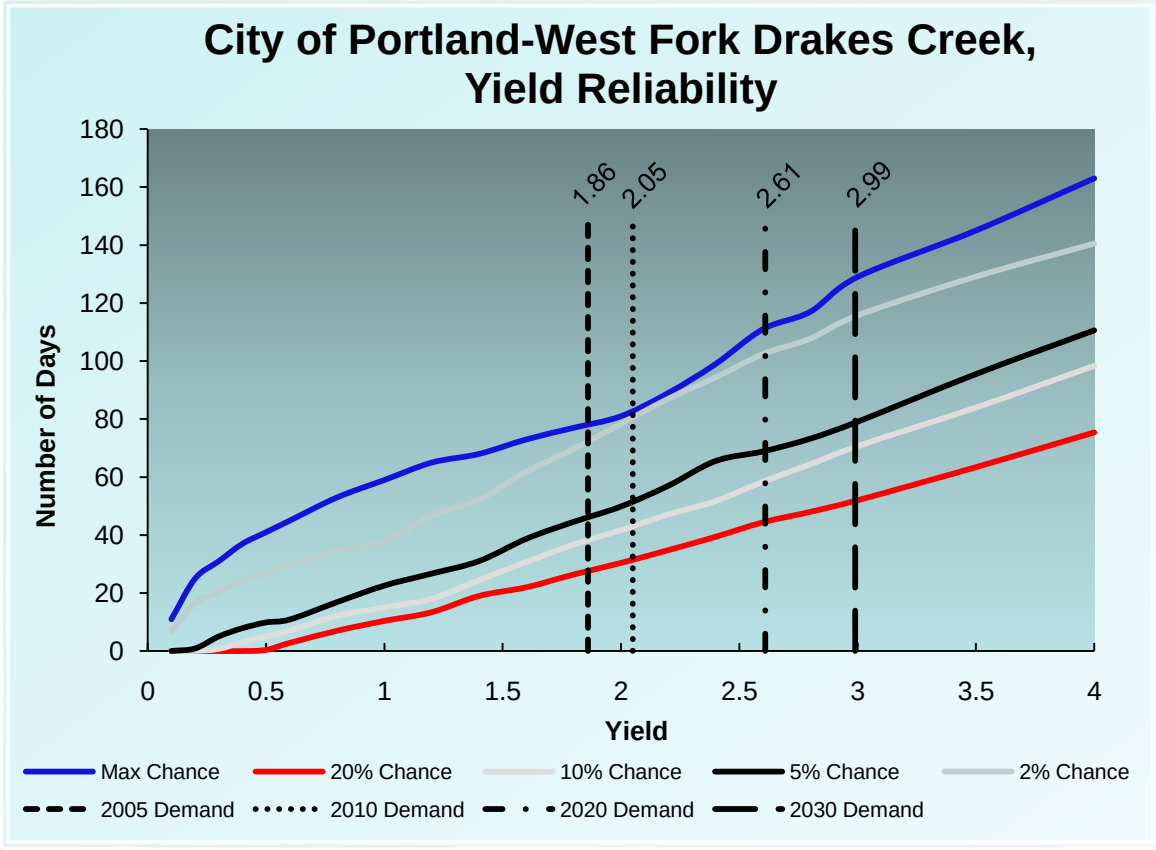
Demand Projections

Utility	2005	2010	2020	2030
White House*	11.00	12.00	15.20	17.30
Gallatin*	6.50	7.11	8.92	10.10
Portland*	1.86	2.05	2.61	2.99
Westmoreland	0.41	0.46	0.61	0.71
Castalian Springs/Bethpage	1.03	1.15	1.52	1.78

* Average Daily Raw Water Withdrawals

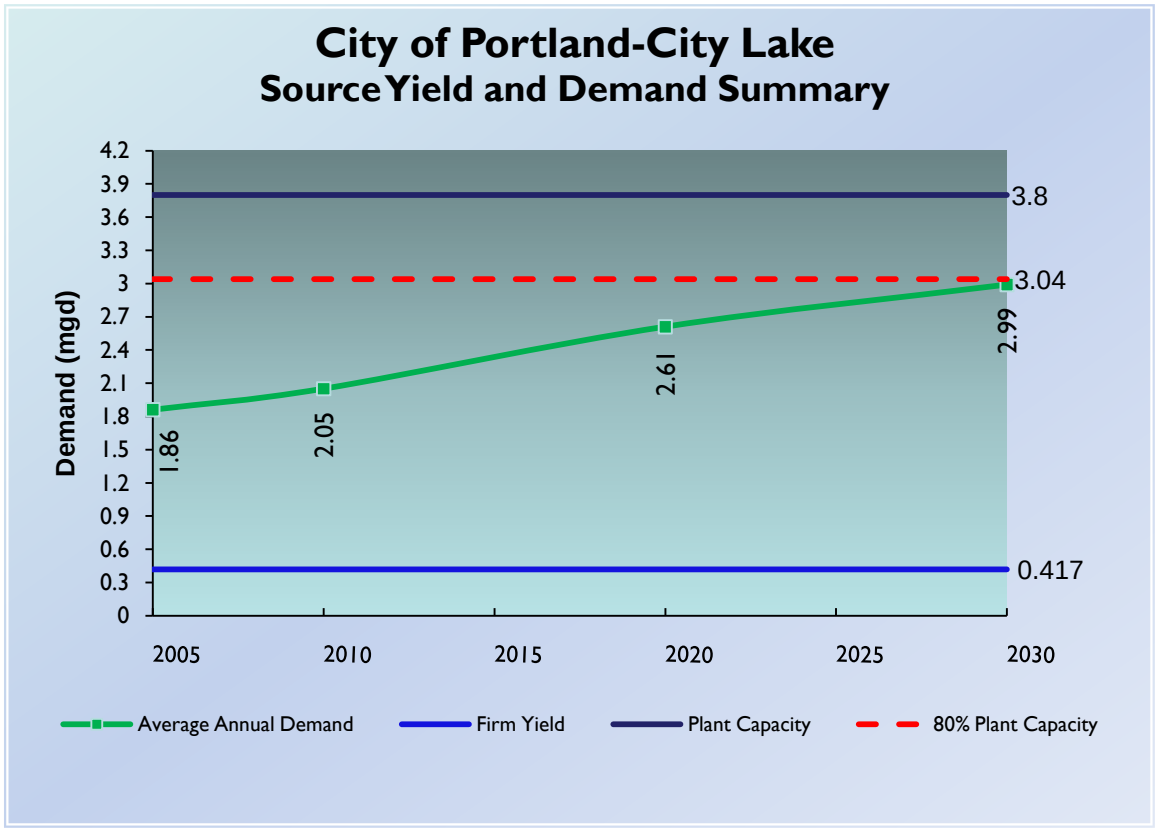
Projected Demand vs. Existing Yield

- Portland, TN
  - Current Portland average demand is 2.05 MGD
  - In the period of record, the maximum number of days, in one year, the demand was not met is ~90
  - In any given year:
    - 2%, ~87 days
    - 5%, ~60 days
    - 10%, ~45 days
    - 20%, ~37 days



Projected Demand vs. Existing Yield

- Portland, TN
  - Current Portland average demand is 2.05 MGD
  - The estimated firm yield of City Lake is .417 MGD
  - OASIS utilized to provide a more completed evaluation of the risk to, and reliability of, Portland's system



Regional Need Statements

- The principle water source for North Central Tennessee is Old Hickory Lake. Raw water withdrawn by White House and Gallatin Utilities satisfies approximately 90% of the existing demand in the pilot area region.

- The overall raw water demand for the North Central Tennessee pilot area is projected to increase from approximately 19 MGD to 30 MGD by 2030. Currently there is sufficient raw water to meet this demand. A charge for withdrawals from Old Hickory Lake may be instituted at some point in the future and could impact water rates across the region.

- The City of Portland satisfies its raw water demand through withdrawals from small surface water sources, and its average annual demand of approximately 2 MGD cannot be met reliably. Portland purchases finished water from neighboring utilities on an as needed basis, but with no formal contracts for this outside supply, security for the system is not provided.

Alternatives Under Consideration

- Optimizing Water Sharing between Utilities
- Evaluation Utilizes OASIS
  - Existing Interconnections
  - Improved Interconnections

			Contract						Rates	Flow Records	
Contract	Seller	Buyer	Max (gal per month or MGD)	Min (gal per month)	Min Pressure (psi)	Max flow (gpm)	Date Enacted	Expires	Rates $/kgal	Maximum Month	Max Day (*avg dayx1.25)*
Yes	GPU	Westmoreland	15 MG per month	750,000	20		6/1/1978	6/1/2018	$4.92	17,933,385	*747,000*
No	GPU	White House	1 MGD daily avg						$3.34	7,439,293	1,497,000
Yes	GPU	CSBWUD	1.5 MGD			1043	3/8/2007	3/8/2017	$3.18	34,093,000	1,377,000
No	WHUD	Portland	-	-					No contract	14,369,500	599,000
No	Westmoreland	Portland							No contract		
No	Westmoreland	CSBWUD							No contract	3,540,200	*147,508*

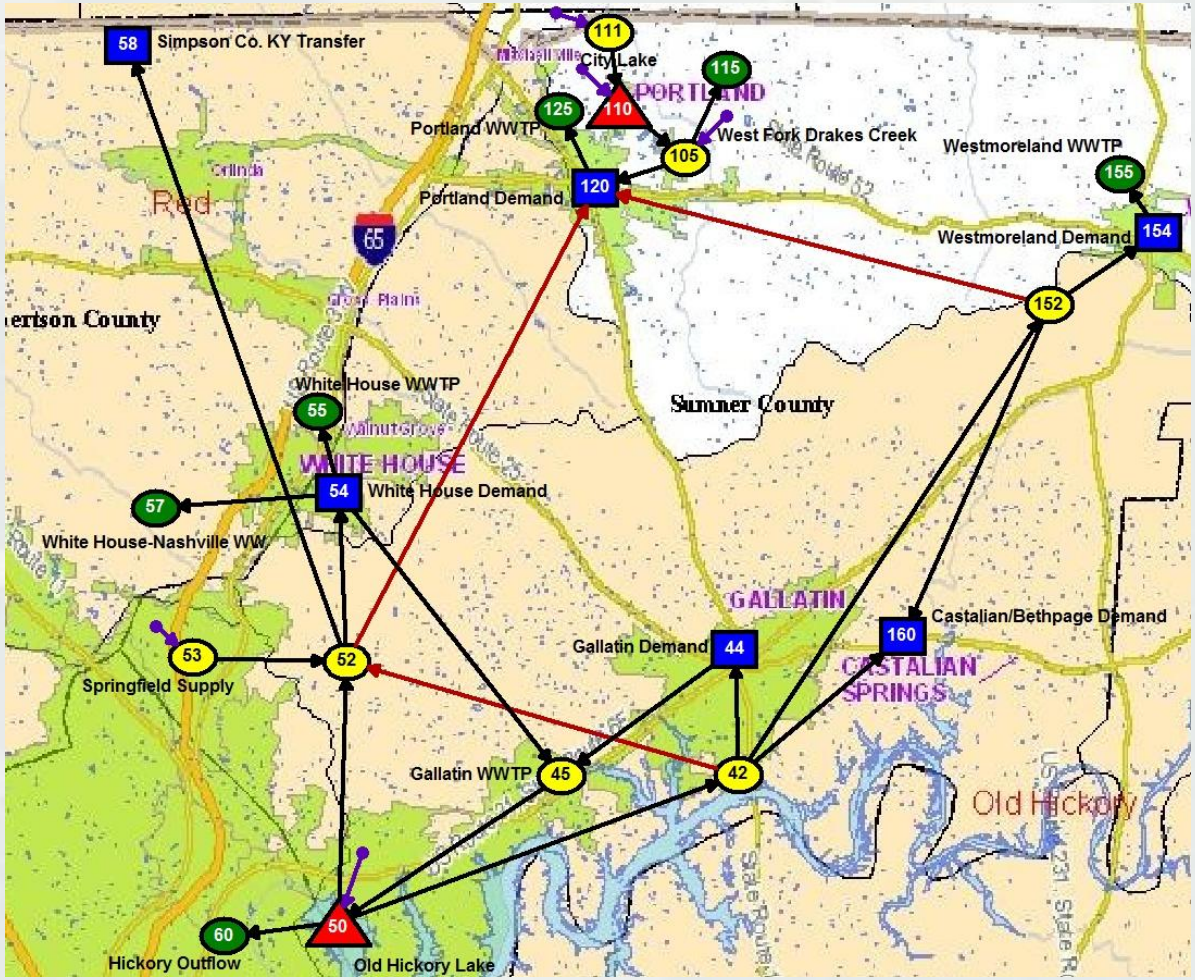
Alternatives Under Consideration

- Portland's Caney Fork Creek Project
  - Earthen Embankment/Roller Compacted Concrete Dam
  - Preliminary Expected Project Yield – 2.08 MGD
  - Total Source Firm Yield – 3.20 MGD
  - Expected Release Requirement:
    - 1.73 cfs (@ .1 cfsm)
    - 1.12 MGD
- Project Feasibility not Confirmed
  - Foundation Conditions
  - Environmental Impacts Evaluation

Alternatives Under Consideration

- Groundwater
  - USACE - Nashville, TN Urban Water Supply Study (1979)
    - Well Field – 9 wells
    - Yield estimated at ~1.3 MGD
  - Questionable Reliability
  - Additional Testing and Development Costs Unknown

OASIS Modeling of Source Reliability



Alternative Screening Protocol

- Tier 1:
  - Reliable Capacity
    - Need met with minimal risk
  - Project Cost
    - Feasibility, Design, Construction
  - Implementability
    - Permitting, Public Acceptance, Property Acquisitions, Constructability
  - Flexibility
    - Phased Implementation, Drought Resistance

Alternative Screening Protocol

- Tier 2:
  - Cost
    - Estimated End User Costs
  - Water Quality
    - Raw and Finished
  - Environmental
    - Benefits and Impacts
  - Multiple Purposes
    - Recreation, etc…
  - Other Factors

Tier 1 Evaluation Matrix

Alternative	Reliable Capacity	Cost	Implementability	Flexibility
Caney Fork Creek Reservoir	+	$$$	-	-
Water Sharing	+	$	+	+
Groundwater	-	$$	+	+

- Based Upon the Tier 1 Qualitative Evaluation, the Water Sharing Alternative Appears to be the Preferred Alternative for North Central Tennessee

Questions??